

基礎醫學 (含生理、生化、微免)**一、單選題 (每題 4 分)**

1. Which of the following methods can be used to estimate the molecular weight of a particular protein without destroying the primary structure of the molecule?
 - A) SDS-PAGE protein analysis
 - B) Flow cytometry
 - C) Enzyme linked immunosorbant assay
 - D) Confocal microscopy
 - E) Thymidine incorporation assay

2. Which of the following statements is correct regarding monoclonal antibodies?
 - A) When subject to reducing analysis, 2 different light chains and 2 different heavy chains can be visualized.
 - B) They are often produced by T cells.
 - C) The targets recognized by antibodies are called epitopes.
 - D) Antibodies are small, positive-charged antimicrobial proteins.
 - E) Antibodies always block the function of their target molecules.

3. Which of the following regarding DNA structure is true?
 - A) The human DNA structure was resolved in the 18th century.
 - B) DNA structure is more sensitive to heat and extreme acidity than proteins.
 - C) An equivalent relationship of A=T and G=C is always found in a single-stranded DNA.
 - D) X-ray diffraction on a DNA fiber was used to reveal the structure of the molecule for the first time.
 - E) Covalent binding between the two strands of DNA is necessary for its stability.

4. A patient has a DNA mutation which prevents the development of phagocytes (granulocytes and monocytes) in his body but other types of cells appear to be normal in numbers. Which of the following regarding the immune system is most likely to be true?
 - A) This patient will have malnutrition due to the lack of phagocytosis.
 - B) This patient will be easily infected by intracellular bacteria but not by extracellular bacteria.
 - C) Cytokine production will be normal in this patient.
 - D) Defects in antigen presentation may lead to functional defects in T cells.
 - E) The immune defects will not be found in his sons and daughters of the patient because the reproductive system is not affected.

(背面仍有題目,請繼續作答)

二、問答題

1. Please list all the uncharged amino-acids. In a natural protein, where are these uncharged amino-acids located. (10 分)
2. Among human pathogens, please give 2 examples each in the prokaryotic and eukaryotic categories. What are the differences between prokaryotic and eukaryotic micro-organisms? (10 分)
3. A husband and his wife are expecting a baby. This husband has an X-linked disease which is not fatal and does not affect his germ-cell production. Please discuss the chance whether the new baby will have the X-linked disease. (14 分)
4. 2007 Nobel Prize in Physiology or Medicine was awarded jointly to Martin Evans, Mario Capecchi, and Oliver Smithies. Please briefly describe their important discoveries? (5 分) What are its significance and impact on biomedical research? (5 分)
5. "Translational Medicine", or "Translational Research", is growing in importance in the healthcare and biomedical research. Please describe what you know about Translational Medicine? (10 分)
6. What is "Nuclear receptor"? (5 分) What are the protein domain characteristics for the nuclear receptor? (5 分) What is the action mechanism for nuclear receptor? (5 分)
7. Single nucleotide polymorphism (SNP) of humans can affect how humans develop diseases and respond to pathogens, chemicals, drugs, vaccines, and other agents. What is SNP? (5 分) Explain how SNP accounts for the different responses to diseases and drugs. (5 分) How can we detect SNP? (5 分)